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October 24, 1989
13160.52

Mr. Bernard Schorle
Remedial Project Manager
U.S. Environmental Protection Agency
Region V, 5HS-11
230 South Dearborn Street
Chicago, Illinois 60604

RE: Project Status
Winnebago Reclamation Landfill
Remedial Investigation

Dear Mr. Schorle:

We appreciated your time and that of other EPA personnel and consultants on October 10, 1989 to discuss the current status of findings and reports at the WRL site. At the conclusion of that meeting, there was no opportunity to summarize our planned activities in moving toward completion of the Phase II RI and preparation of the RI report. This letter is intended to document our planned actions.

Consistent with the recommendations in Section 5.2, Recommendations for Phase II, in the draft Interim Groundwater Quality Evaluation, Winnebago Reclamation Landfill report dated January 1989, we plan to proceed with round 5 leachate sampling and rounds 3 and 4 groundwater sampling at the specified locations. Pursuant to our discussions, no additional wells will be constructed immediately downgradient of the landfill or west of Killbuck Creek. In response to Mr. Bob Kay's recommendation, several existing monitoring wells will be slug tested to determine hydraulic conductivities. The specific wells to be tested will be determined through discussions among yourself, Warzyn and the USGS.

Although the composition of leachate in the landfill cannot be fully documented through time (1984 data by E.C. Jordan reported total ethenes in the landfill leachate ranged from 0.9 to 15 ug/l), it is highly improbable that sufficient quantities of solvent based wastes could have been introduced into the landfill that would result in the VOC concentrations presently in the groundwater. The introduction of such wastes is improbable because:

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- The facility was permitted and has been operated since start-up in 1972 as a municipal landfill accepting only municipal and on occasion "Illinois Special" wastes;
- All wastes accepted at the landfill are documented, and that documentation indicates that only a limited amount of "Illinois Special" wastes were accepted (see attached Table 1).
- Access to the site for disposal has always been tightly controlled.
- Leachate has lower concentrations of the VOC in question than found in groundwater.
- No apparent mechanism exists to push VOCs in the gas into groundwater. As stated below, a 1980 report on gas migration indicates gas was not in contact with bedrock.
- As noted below, since the methane extraction became operational in 1980, any such migration would have ended, and any solvents transported beneath the site would have migrated downgradient by now.

The facility was designed and constructed in the early 1970's with a state-of-the-art liner and leachate collection system. Such systems minimize the hydraulic head on the liner and thus minimize the potential for migration of leachate through the liner. Although the possibility does exist for spills during removal of leachate from the site for transport and disposal, the remark by EPA personnel during the meeting implying that improper dumping could have occurred is totally unfounded.

Warzyn and U.S. EPA staff have, as committed to during the meeting, reviewed a report titled "Methane Study Winnebago Reclamation Service Inc.", August 1980. That report showed methane levels had migrated east of Lindenwood Road from the site, but sampling indicated that while methane was found in the highly permeable soil layers above the bedrock, none was present in the upper 10 to 20 feet of bedrock. Since the water table beneath the area in question is in bedrock, landfill gas was not in contact with the water table. The installation and operation of a gas extraction system beginning in mid 1980 effectively eliminated the excursion of gas from the landfill. A literature search for information on VOC in landfill gas and the kinetics of the gas/liquid interchange that would be required to reach the observed concentration is continuing. Currently, the probability of migrating landfill gas as a source of VOC contamination in the groundwater adjacent to the WRL site is considered extremely low.

At our meeting, Bob Kay of the USGS, with apparent concurrence of U.S. EPA, said he was not convinced that the VOC contamination near the WRL site is attributable to Acme Solvents because nine monitoring wells between the sites are "clean" - thus presumably failing to demonstrate a

hydraulic/contaminant continuum between the sites. However, available analytical data (see attached Table 2) for 12 wells (B11, B11A, B16, B16A, STI-5I, STI-5D, B9, B6S, B6D, MW201A, MW201B, and MW105) that may be considered to be between the sites shows that all the wells except STI-5I and -5D, for which complete, validated analytical data is not yet available to Warzyn, and well MW201B, sampled only once, have shown measurable levels of total ethenes. Five of those wells (B11, B11A, B16, B16A and B6D) have shown considerably elevated levels of total ethenes with a high of 224 ug/l at well B16A.

We feel several factors influence and account for the lack of elevated VOC concentrations in all wells between the sites at all times. Major influences are:

- The solvent lagoons at the Acme Solvents site appear to have been located in specific areas, rather than throughout the entire site, and were virtually on the bedrock. The site history coupled with the fractured bedrock, strong vertical gradient, and intermittent recharge makes it likely that the plume is uneven, and will not be consistently found in every well.

- There is a paucity of optimally located and constructed monitoring wells between the sites that intercept the contaminant plume;

- The complex nature of the flow system (flow in bedrock fractures as the predominant migration route), and;

- Failure of the existing wells to: 1) intercept a fracture zone (water table wells are above the fracture zones) or; 2) be completed in a fractured zone.

Wells in Table 2 with documented elevated levels of contamination (B11, B11A, B16, B16A and B6D) are completed in, or very close to, a highly fractured zone in the dolomite bedrock and have a five foot long screened interval. Well B9 and B6S, showing low levels of contamination, are shallow or water table wells screened above any fracture zone. Well MW105, also showing very low levels of contamination, appears to be, based upon limited core log information, partially screened in a slightly fractured zone. The limited data indicates the fractures play a significant role in contaminant transport.

The information available for wells MW201A and MW201B indicates that they are both deep wells, 250 and 198 feet respectively, with ten feet long screened intervals and extended effective intervals that may allow dilution of any contaminants. A review of the E.C. Jordan report on the construction of the wells indicates that in addition to the clean water potentially introduced into the formation during drilling, several borehole volumes of water were introduced into the boreholes to stabilize the static water level and in performing permeability tests. The single reported sampling event

closely followed the completion of the wells, and in following the stated sampling procedure only two well volumes of water were purged from the wells prior to sample collection. Depending upon the well development/purging procedure, undefined in the report, the sample as collected may not be representative of formation water. The drilling log for MW201B does not indicate the interception of a fractured zone, thus a potential contaminant zone may have not been intercepted. Well MW201B was also reportedly purged with an air lift purge system prior to sampling [E.C. Jordan, May 1986]. A disadvantage to an air purge system is that "gas stripping of volatile components may occur" [pg. 48, Manual of Ground-Water Quality Sampling Procedures, NWWA/EPA Series, 1981].

Wells STI-5I and -5D are also both deep wells, 140 and 201 feet deep respectively and although located in a high fracture zone may be below the zone of contamination. We are also concerned that the use of air rotary drilling for wells STI-5I and -5D could have purged the VOCs from the borehole and from an extended portion of the formation. The use of air rotary drilling methods for advancement of STI series wells could have resulted in masking of VOCs which could have been detected during drilling.

Based upon the presence of background VOC concentrations and the detection of VOCs in wells between the two sites, we conclude any installation of upgradient wells is the responsibility of Acme Solvents. We urge EPA to require Acme Solvents to perform sufficient sampling and analysis so as to clearly define the plume of contamination emanating from their site. It is not disputed that tens of thousands of drums of waste solvents were disposed of at the site in an uncontrolled fashion in unlined lagoons and mounds of buried drums immediately on top of fractured rock from 1960 through 1973. The Acme Solvents facility was the exclusive disposal facility used by one of the major solvent reclamation businesses in northern Illinois for 13 years. The E.C. Jordan RI report stated pit samples reflect that at least 2 apparent waste solvent lagoons were filled with soil, not drained, and then used again for paint and other wastes.

Plume definition is standard RI/FS procedure at all Superfund sites without regard to who owns the property on which the plume has migrated. Once Acme Solvents properly performs and documents the results of such a sampling and analysis program between the sites, it should provide EPA with the information which it indicated was lacking to adequately define the extent of release from the Acme Solvents site.

It is WRL's intention to proceed with investigative efforts in a manner consistent with the approved project Work Plan. Literature relating to the one potential mechanism noted by the U.S. EPA or its consultants for migration of material from the site without a chloride plume, methane/gas migration, is being reviewed. We will promptly provide the U.S. EPA with the results of that review. However, for the reasons stated above, that mechanism seems highly improbable. U.S. EPA offers no other plausible explanation for its suggestion that VOCs upgradient of the site, adjacent to

the southeast corner of the site, come from WRL. The breakup of the Acme Solvents plume by recharge, reduction in source strength and by fracture flow apparently is not being considered by the Acme Solvents PRP investigation, though under established RI/FS practice it should be. The WRL group is not willing to finance an investigation of migration routes which are not plausible release pathways of materials from their site.

If you have questions or comments, please contact us at (312) 691-5000.

Sincerely,

WARZYN ENGINEERING INC.

James A. Hill
Project Manager

Gary E. Parker, P.E.
Manager Hazardous Waste Unit

cc: G. Marzorati
J. Helmstrom
R. Hall

[WP3]
160L16GEP/dms/JAH

TABLE 1

Accepted Special Permitted Wastes

Permit Number	Generator	Amount	Waste
73-10	Rockford Sanitary District	395.14 tons	Sanitary Sewage Grease Skimmings
73-16	Quality Metal	2,221/55 gal. drums	Industrial Wastewater Treatment Sludge
74-6	Viking Distributors	3 tons	Rubber back carpet cement
74-20	Rockford Products	783.22 tons	Industrial filter cake
74-72	National Lock	15/55 gallon drums per month	Waste sludge
74-76	National Lock	5,000 gallons	Liquid waste
74-93	Tuttle Electric	1,200 gallons	Hydroxide
74-124	Deans Milk	40 tons	Milk fat
74-125	National Lock	180 tons	K and Na hydroxide waste
74-126	National Lock	25,000 gallons	Spent acid waste
74-130	Commercial Wire	24/55 gallon drums	Metal hydroxide
74-134	National Lock	6,500 gallons	Weak phosphoric acid of pH 4
74-150	Barber Colman	12/55 gallon drums	Paint sludge
74-152	Hydroline	12/55 gallon drums	Black oxide
74-153	Dean Foods	4/55 gallon drums	Thin ammonia solution
75-34	Commercial Wire	18/55 gallon drums	Metal hydroxide sludge
75-65	Northern Illinois Plating	65/55 gallon drums	Plating process waste
75-221	Rockford Sanitary District	3,000 tons	Vacuum filter cake
75-239	Acme Resin	60.81 tons	Phenolic water base
75-301	Testors	520 gallons	Glue
75-332	Chrysler	135,996 gallons	Infilco sludge
75-333	Chrysler	1469.17 tons	Paint sludge
75-334	Chrysler	3143.95 tons	Industrial waste
75-430	Quality Metal	56/55 gallon drums	Degreaser sludge
77-365	Rockford Clutch	12/55 gallon drums	Asbestos

Table 1
(Continued)

Permit Number	Generator	Amount	Waste
79-1310	Greenlee	6,717.64 tons	Foundry Sand
79-1250	Greenlee	through February 1980	Foundry Sand
79-1959	Gunite	11,158.37 tons	Foundry sand
80-2468	Gunite	through February 1980	Foundry sand
80-2674	Gunite		
80-139	Kaney	790.51 tons	Soil contaminated by tank truck washings
78-1045	Kaney		
78-501	Rockford Sanitary District	391,809.42 tons	Vacuum filter cake
		May 1978 through December	1984
80-2589	Wrecking Corporation of America	3,000 cubic yards	Asbestos insulation
	City of Rockford	718,975 tons	Household
	Rockford Sanitary District	11,254.67 tons	Grease, grit, screenings
	Rockford Sanitary District	1,369.76 tons	Office refuse

[WP3]
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Table 2

Total Ethenes
(ug/l)

Sample Date	B11	B11A	B16	B16A	STI-5I	STI-5D	B9*	B6S	B6D
10/25/82	ND	NI	NI	NI	NI	NI	ND	ND	ND
09/06/83	23	NI	34	NI	NI	NI	ND	11	ND
05/01/84	4	NI	6.8	NI	NI	NI	ND	ND	5.1
12/01/84	6	27.3	40.6	37.4	NI	NI	ND	NA	NA
01/01/85	5.1	36.1	224.8	43.5	NI	NI	0.5	NA	NA
11/06/85	NA	NA	NA	NA	NI	NI	NA	NA	NA
04/06-07/88	3.39	14.1	57.44	33.27	NI	NI	ND	ND	6.6
06/14-15/88	0.76	28.3	21.7	38.0	NI	NI	ND	0.51	89.14
08/10/88	NA	NA	29	NA	ND	?	ND	NA	NA

Sample Date	MW201A	MW201B	MW-105
10/25/82	NI	NI	NI
09/06/83	NI	NI	NI
05/01/84	NI	NI	ND
12/01/84	NI	NI	NA
01/01/85	NI	NI	NA
11/06/85	6.8	ND	NA
04/06-07/88	NA	NA	1.09
06/14-15/88	NA	NA	0.37
08/10/88	NA	NA	NA

? = Data not supplied by Acme Solvents
NA = Well not sampled
ND = Not Detected
NI = Well not installed
* = Shallow water table well

[WP3]
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